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Better Data – Better Decisions

Increasing Data Transparency across all Energy Data Collection

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Increasing transparency through international cooperation

- Why is there a need for international cooperation?
- Some of the history
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Compiling Energy Statistics: Theory from IRES and Guidance from the Compilers Manual

- Key IRES concepts
- IRES methodology for oil and gas
- ESCM: why, what and how
- Chapters of manual and examples

A need for more cooperation

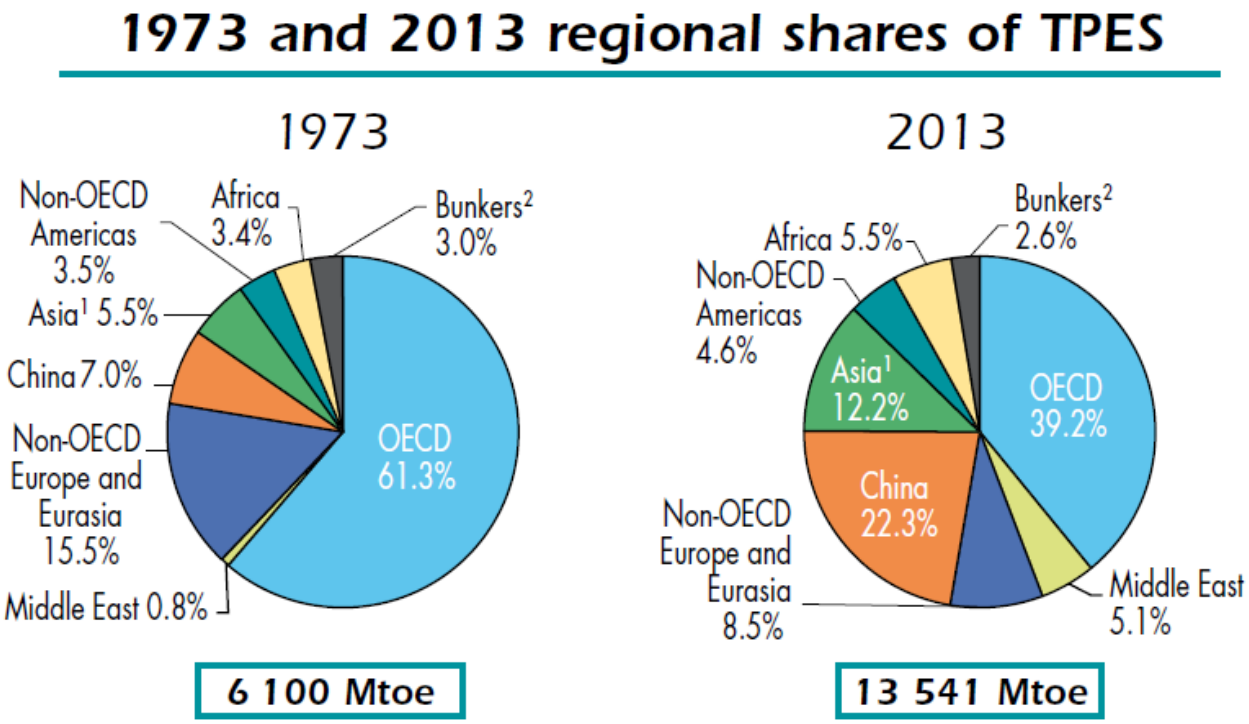
- Resources issue
- A need to reduce the reporting burden on member countries
  - ✓ *Harmonised questionnaires and agreed definitions*
- A need to be able to show consistent energy data published by international organisations
  - ✓ *Not necessarily same data but differences can be explained.*
- Joining expertise and forces between organisations
  - ✓ *Each organisation has abilities/weaknesses and particular areas of expertise*
  - ✓ *Organisations, like countries, face resources cuts*
- Raising the profile of energy statistics and statisticians
  - ✓ *Statistics often lack a good image*
  - ✓ *Global initiatives draw the attention of policy makers at the highest level*

A changing energy world

- World balance of energy is changing: OECD versus Non-OECD. Data gathering history for most OECD countries much longer than non-OECD.
- Energy markets are more and more global
- An increasing need to be more transparent and to improve the coverage of global energy data
- A need to improve energy data quality: both in OECD and non-OECD countries
- An increasing need for more detailed information

A changing energy world

World balance of energy is changing: OECD versus Non-OECD



Non-OECD Share

- **Oil refining**:
  33% in 1973,
  51% in 2013
- **Gas production**:
  29% in 1973, 65% in 2013
- **Electricity consumption:**
  27% in 1973,
  52% in 2013,
- **TPES:**
  39% in 1973,
  61% in 2013,

A changing energy world

Energy markets are becoming more global

- Oil market is global market.
- Gas market becoming more global with LNG.
- Electricity market is becoming more regional.

✓ There is therefore a need for more global data and improved global energy data transparency.

✓ More information available at any level; it is essential that international organisations provide good quality information.

✓ International organisations have overlapping membership, there is therefore a need for harmonising energy data.

Some of the history behind international cooperation

Quality problems: The symptoms (Early 2000s)

- First Signs of Deterioration in Energy Statistics (OECD)
- Completeness
  - More and more data are estimated
  - More and more data are missing and/or confidential
  - Less and less details, more aggregation (CHP, public vs. auto producers, …)
- Quality
  - Efficiency of power plants > 100%
  - Subtotals do not add up to totals
  - Large statistical difference (>20%)
  - Breaks in time series - no revisions in time series
  - “Other sectors” often used as a balancing item
- Timeliness
  - More and more time to collect, process, check and release data

The reasons for decreasing data quality

New developments make the tasks of statisticians much harder

- Liberalisation of the market:
  - From one company to hundreds
  - Confidentiality (linked to liberalisation)
- More work passed to statistics offices:
  - More companies to survey (liberalisation)
  - Renewables (remote information)
  - Energy efficiency indicators (including socio-economic data)
  - Environment (estimation of GHG emissions, ….)
- Resources do not follow work load:
  - Statistics still have a low profile, budget cuts
  - Fast turnover in staff: Lack of experience, continuity

Organisations started to react

IEA: A quick reaction in order to reverse the trends

- At the political level:
  - Several presentations on the situation at the Governing Board
  - Transparency and statistics were also high on the agenda of the Ministerial Meeting in May 2005
- At the technical level:
  - Release of an Energy Statistics Manual (together with Eurostat)
  - Training of statisticians from Member / Non-Member countries
  - A series of meetings with Member countries

Investment started to pay back:
More timely, more complete, more reliable data

Organisations started to react

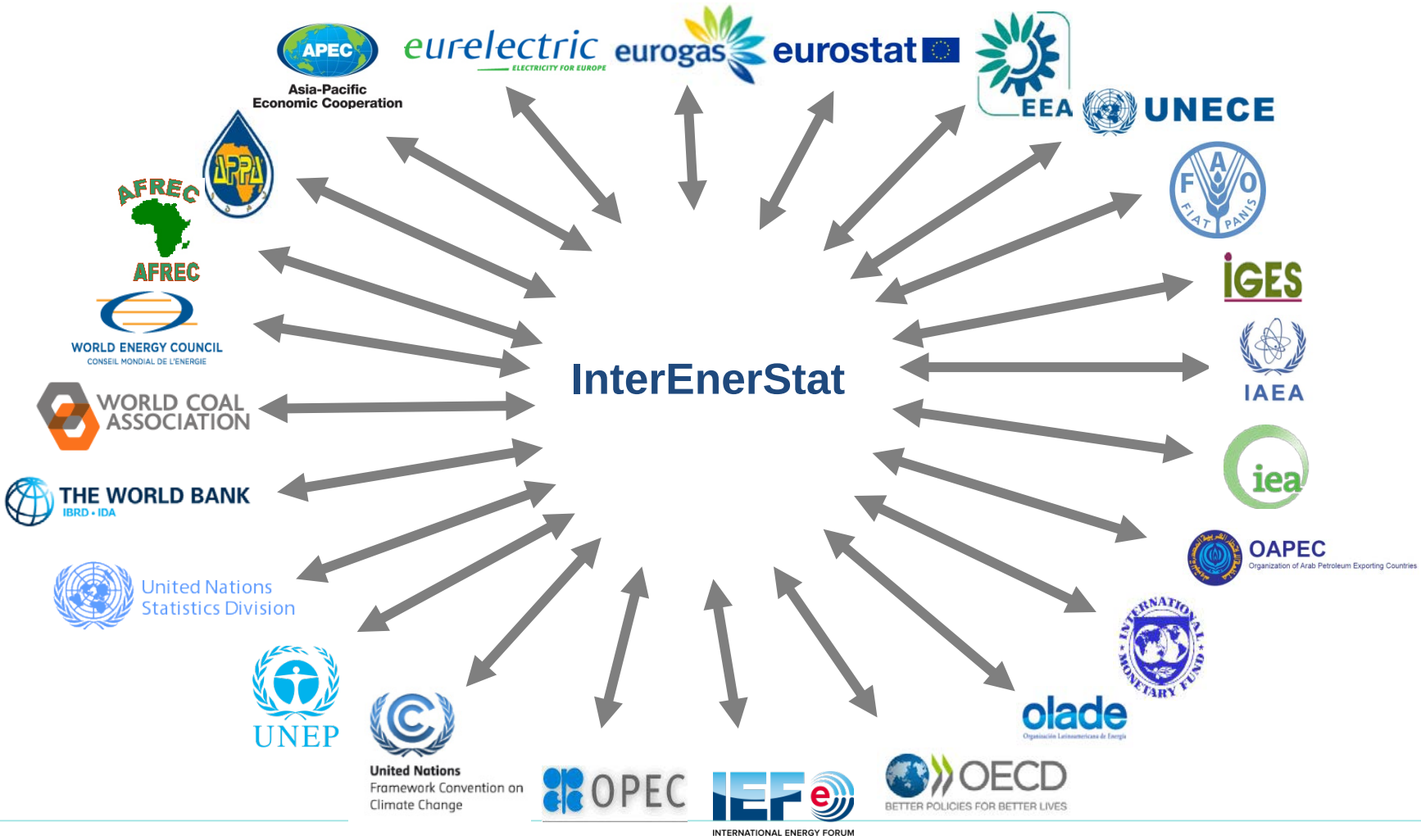
- International Energy Forum Meetings
- UNSD: energy was in the spotlight at the 36th Session of the UN Statistical Commission
  - ➢ This led to the Ad-hoc Energy Group Meeting (23-25 May 2005, UN, New York) and the recommendation to establish the Oslo City Group and an Inter-Secretariat Working Group on Energy Statistics
  - ➢ The latter merged with…

InterEnerStat

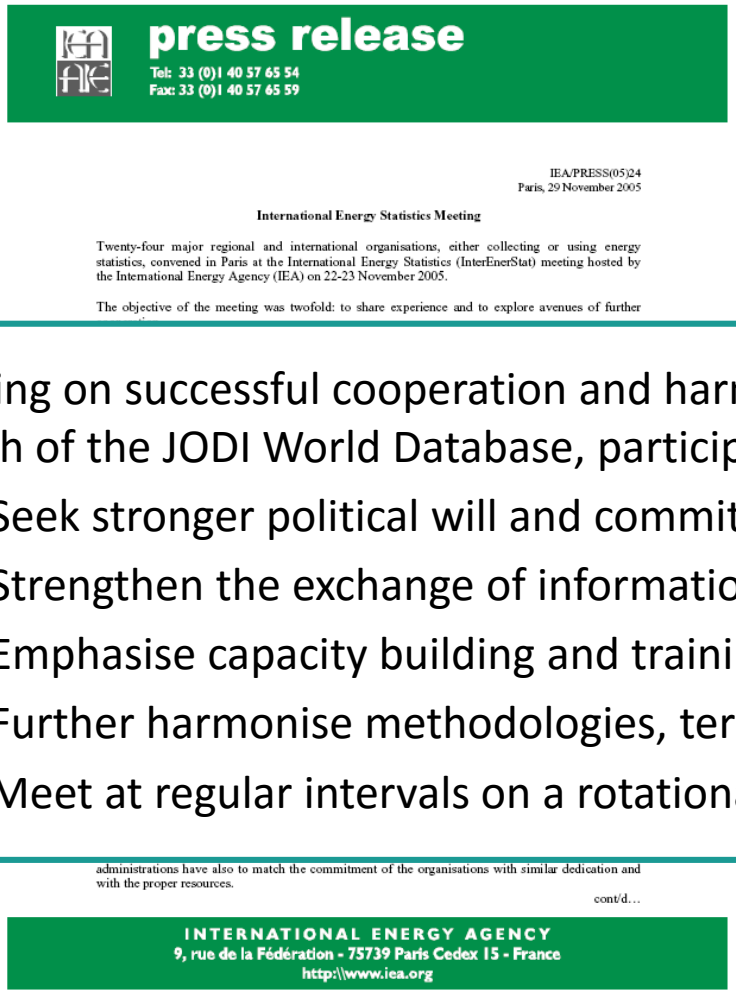
International Energy Statistics initiative started by the IEA in 2005 gathering together 20+ organisations

- Participants:
  - 24 major regional and international organisations.
  - Both data providers (IEA, UNSD, OPEC, Eurostat, FAO) and users (WB, IMF, UNFCCC,…)
- Objective:
  - To improve the overall quality of global energy statistics through a stronger international cooperation

Organisations involved in the process



Participants Agreed on a Communiqué



press release

Tel: 33 (0)1 40 57 65 54
Fax: 33 (0)1 40 57 65 59

IEA/PRESS(05)24
Paris, 29 November 2005

International Energy Statistics Meeting

Twenty-four major regional and international organisations, either collecting or using energy statistics, convened in Paris at the International Energy Statistics (InterEnerStat) meeting hosted by the International Energy Agency (IEA) on 22-23 November 2005.

The objective of the meeting was twofold: to share experience and to explore avenues of further

Participating Organisations :

African Energy Commission (AFREC), Asian Pacific Economic Cooperation (APEC), African Petroleum Producers Association (APPA), EURELECTRIC, Eurogas, European Commission – Eurostat, European Environment Agency (EEA), Food and Agriculture Organisation (FAO), International Atomic Energy Agency (IAEA), International Energy Agency (IEA), International Energy Forum Secretariat (IEFS), International Monetary Fund (IMF), Intergovernmental Panel on

administrations have also to match the commitment of the organisations with similar dedication and with the proper resources.

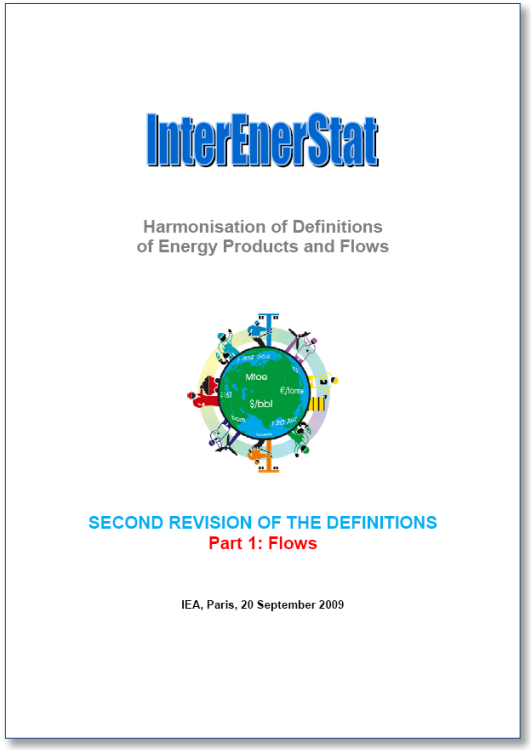
cont/d…

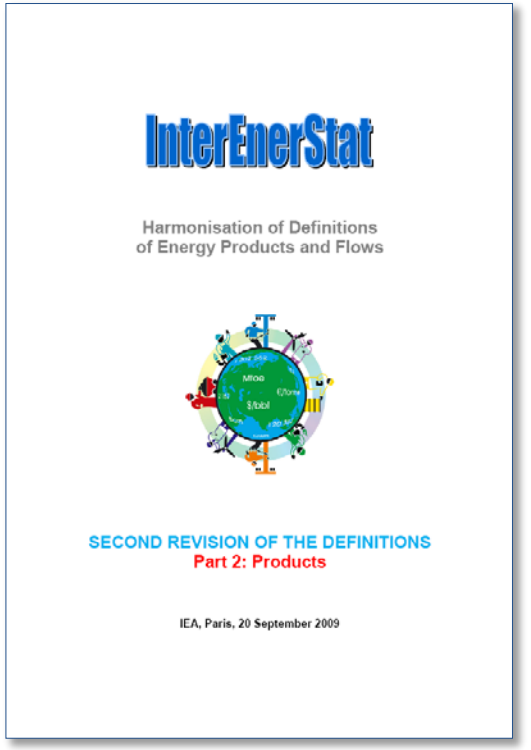
INTERNATIONAL ENERGY AGENCY
9, rue de la Fédération - 75739 Paris Cedex 15 - France
http:\\www.iea.org

Building on successful cooperation and harmonisation initiatives, such as the recent launch of the JODI World Database, participants agreed to:

- Seek stronger political will and commitment to increase quality of energy reporting;
- Strengthen the exchange of information and expertise;
- Emphasise capacity building and training;
- Further harmonise methodologies, terminologies and definitions; and
- Meet at regular intervals on a rotational basis to review progress.

Harmonised definitions reached at the end of 2010 after 5 years of negotiations





These definitions were incorporated in the International Recommendations for Energy Statistics (IRES) and agreed by UN Statistical Commission in February 2011

A reminder of the InterEnerStat framework for harmonisation

- ✓ These definitions are guidelines to help organisations to arrive to a common understanding of what is a covered by a particular flow or a particular product.
- ✓ It is well understood that no organisation is obligated to change its current definitions to adopt the common definitions which could result from this work.
- ✓ It will be up to each organisation to modify (some of) its definitions to better comply with the overall framework. Under no circumstances such changes should be mandatory.
- ✓ **Definitions were used to feed the preparation of the IRES handbook of the UNSD.**

Several initiatives for better harmonisation and co-operation

- ✓ Eurostat – IEA – UNECE cooperation
- ✓ UNSD-IEA coordination to reduce response burden
- ✓ The JODI - Joint Organisations Data Initiative
- ✓ APEC decided (in 2005) to align their annual questionnaires with those of IEA/Eurostat/UNECE
- ✓ AFREC established (in 2008) and working towards a similar statistics approach on 5 questionnaires
- ✓ Joint capacity building and training
- ✓ Oslo City Group
- ✓ InterEnerStat

→ Global initiatives

The Oslo Group

In parallel the Oslo Group was very active

- User needs for energy statistics
- Scope of official energy statistics
- National good practices
- Selected methodological and quality problems
- Needs for harmonization of energy statistics systems
- Key content provider for International Recommendation on Energy Statistics **(IRES - Feb 2011)** and Energy Statistics Compilers Manual **(ESCM – currently being finalised)**
- Methods for improving consistency in different statistical systems and reducing response burden

IRES and ESCM: Overview

- Key IRES concepts
- IRES methodology for oil and gas
- ESCM: why, what and how
- Chapters of manual and examples

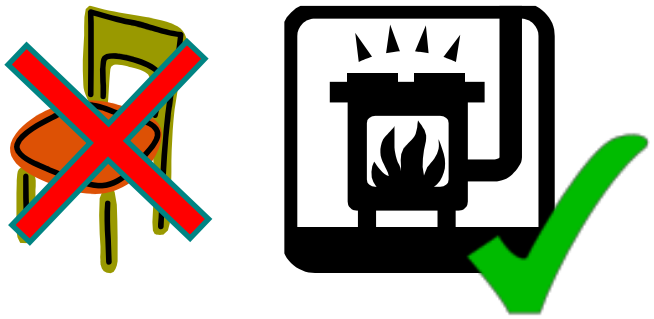
Key IRES points

- IRES improves comparability across products, flows and countries:
  - Countries measure the same thing, reducing systematic errors
  - Countries publish data in similar formats, increasing transparency
  - Data for different products are compiled the same way, meaning product comparisons/balances are possible
  - Data users understand what the statistics should represent
- Now, some specific examples

Definition of energy product

- *IRES 2.9: "Energy products" refers to products exclusively or mainly used as a source of energy. Biomass, waste etc. included only when used for energy purposes*

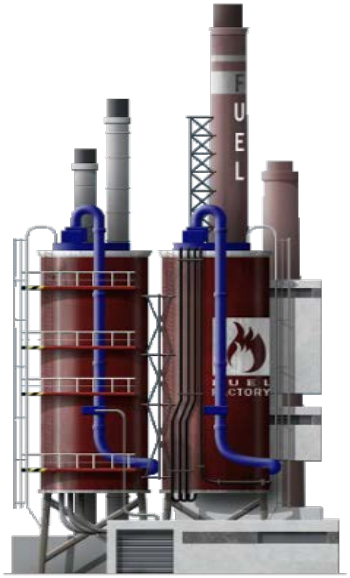
➢ Result: energy statistics exclude non-fuel wood, or ethanol when not used as an energy product. Non-energy products from a fossil origin (lubricants) are always included by definition, allowing refinery input/output checks



Scope of Energy Statistics

- *IRES 2.18: it's important that data on the production of energy outside energy industries is also collected and included in total energy production.*

➢ Result: fuelwood collected and used non-commercially needs to be properly accounted for; small "teapot" refineries should have their output included



IRES Applications for Oil and Gas

- Units for Dissemination: mass (kt) for oil, Terajoules (GCV) for natural gas (IRES 4.29).

- **Net** calorific values (aka lower heating values) should be used to compile balances in TJ (IRES 4.36), as interest lies in **useful** energy output.

The Concept of Production

5.10: Primary production is the capture or extraction of fuels or energy… within the national territory in a form suitable for use. ***Inert matter removed from the extracted fuels and quantities reinjected, flared or vented are not included.***

Data for JODI oil and gas production should be NET of reinjected, flared and vented quantities (and water, sand etc.)

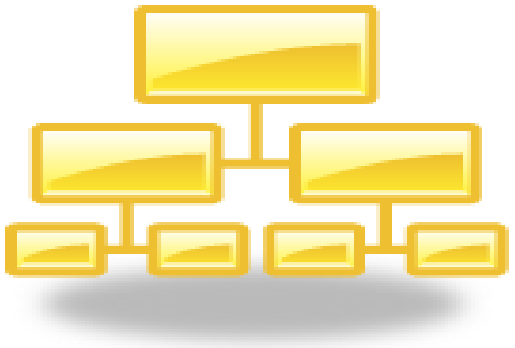
Bunkers and Non-Energy Use

- IRES 5.14/5: For the purposes of energy statistics, exclude International Marine /Aviation Bunkers from exports and supply
- IRES 5.5: It's important to separately identify the non-energy part of final consumption.

➢ *Both important principles for accurate GHG emission inventories (but not necessarily on a monthly basis)*

SIEC

- IRES 3.1: creates the Standard International Energy product Classification (SIEC)
- Provides a tree-structured framework for all energy products; different levels of detail possible depending on the country's need
- A standard to be used across countries; further breakdown possible if desired (coconut oil, olive cake, shale gas, offshore vs onshore)



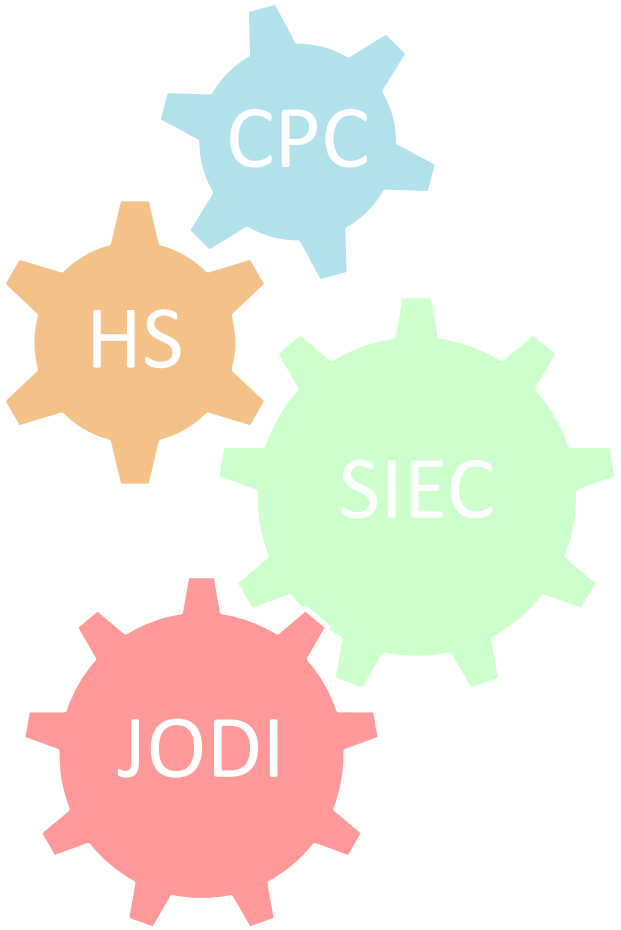
4 Oil
46 Oil products
465 Gasolines
4652 Motor gasoline

5 Biofuels
53 Biogases
531 Biogases from anaerobic fermentation
5312 Sewage sludge gas

Relations with other systems

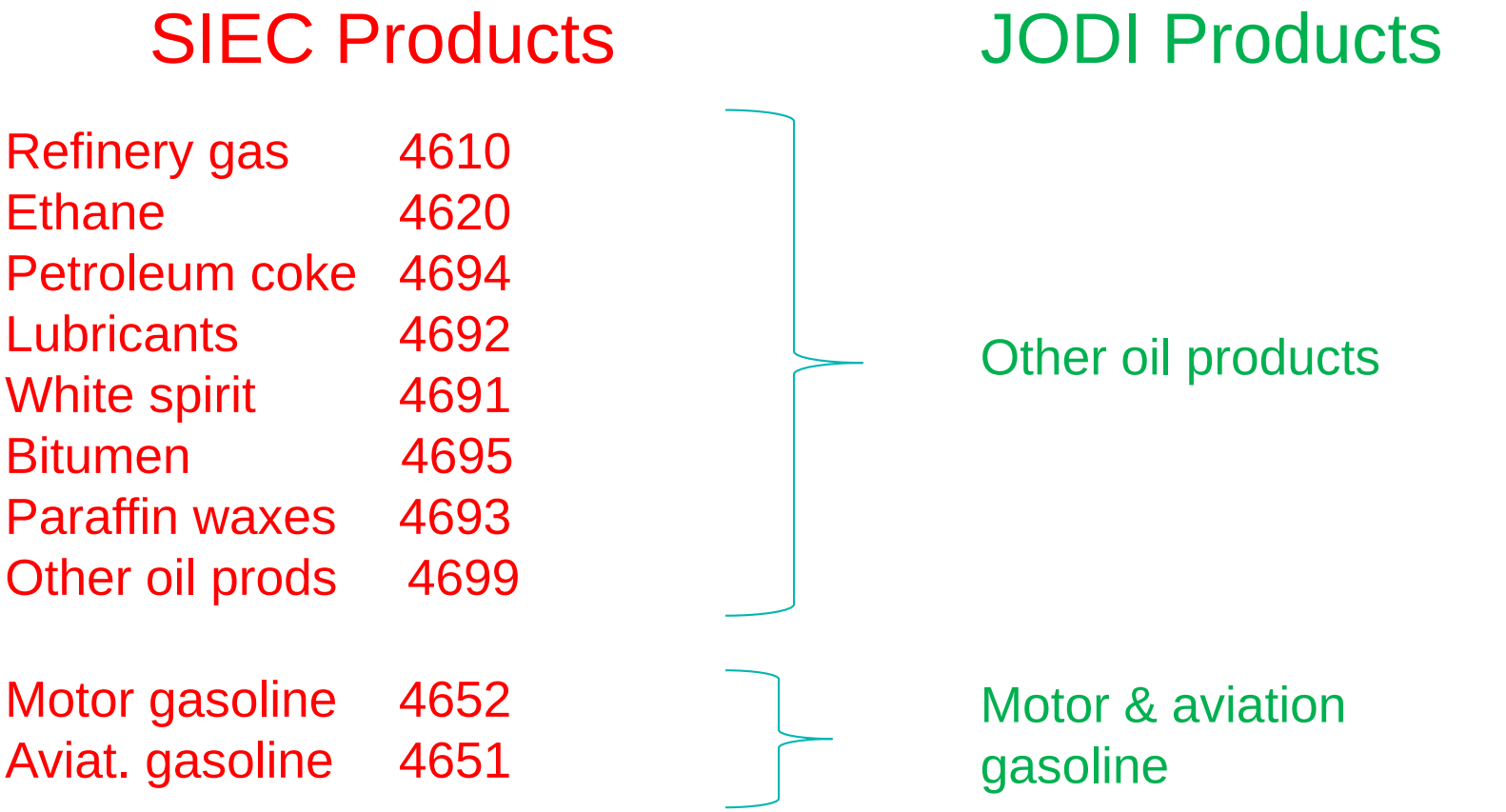
- HS 2710.11: “Light oils and preparations”
- CPC 33310 and 33320: “Motor spirit (gasolene), including aviation spirit” ; “spirit type (gasolene type) jet fuel”
- SIEC 465: “gasolines”
- JODI: “motor and aviation gasoline”

HS	2710.11*		
CPC	33310		33320
SIEC	4651	4652	4653
JODI	Motor and aviation gasoline		



SIEC Agrees with JODI!

- JODI products are a subset of SIEC products (so no mapping problems)



Definitions agree, but SIEC more detailed

- JODI (short) definition: *"LPG comprises Propane and Butane"*

Simple and clear; ideal for a monthly data collection

- SIEC definition: *"LPG refers to liquefied propane (C3H8) and butane (C4H10) or mixtures of both. Commercial grades are usually mixtures of the gases with small amounts of propylene, butylene, isobutene and isobutylene stored under pressure in containers."*

More exhaustive, relevant for more accurate annual data, or when deriving energy data from CPC or HS data

Definitions agree, but SIEC more detailed

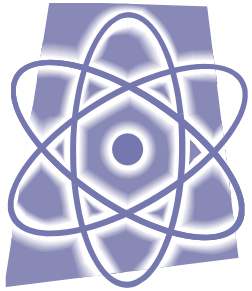
JODI Term	SIEC Scope
• *"Demand"*	• Final consumption • Energy industries own use • International bunkers • Transformation

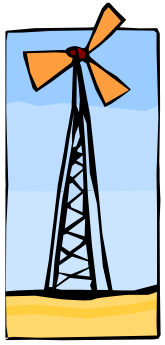
This difference reflects both the oil-specific nature of JODI, and that some data (bunkers, own use) are difficult to obtain or are less relevant on a monthly basis.

Moving Forward…

IRES provides useful definitions of flows/products.

But…




- *Can I see some examples of other countries' practices?*
- *How should I compile metadata, or handle confidentiality?*
- *How do these recommendations relate to MY country?*

The need for a Compilers Manual

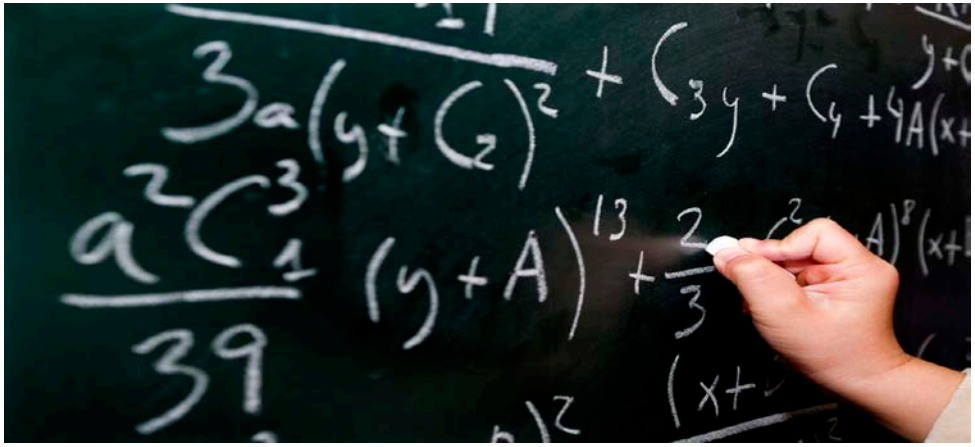
- A Compilers Manual should be a more hands-on, example-heavy document, to complement IRES.

- It is NOT a set of recommendations or “best” practices, but a set of voluntary guidance and examples for countries to use if **they want to**

- *Still being finalised…*

IRES/ESCM

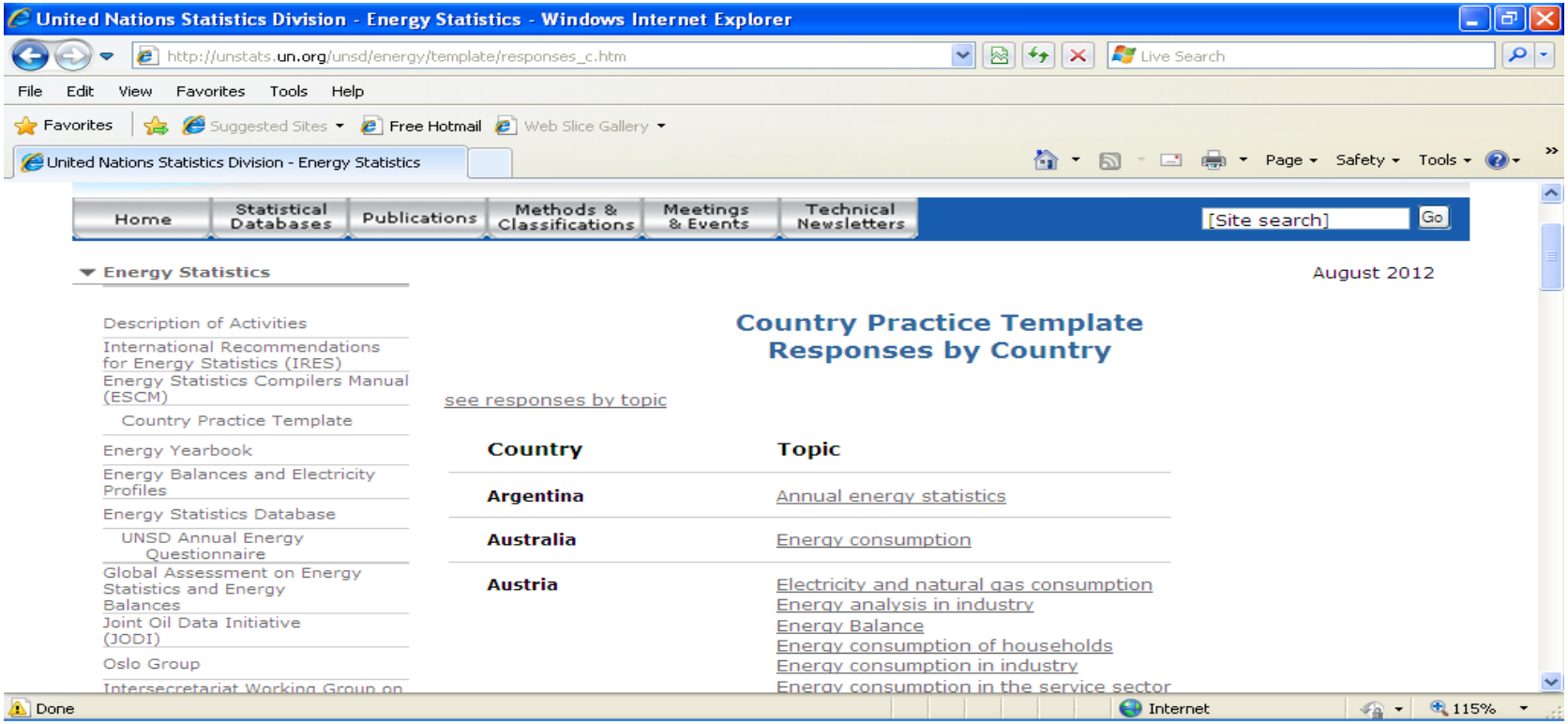
IRES is about definitions of flows/products: **THEORETICAL**



ESCM is about practical guidance and country examples: **PRACTICAL**

Some country practices already published

(but ESCM will have many more)



http://unstats.un.org/unsd/energy/template.htm

ESCM Chapters

- Introduction
- Legal Framework
- Classifications and linking with other international standards (HS, CPC, ISIC)
- Generic Statistical Business Process Model
- Data sources (surveys and administrative data sources, estimation, modelling)
- How to compile energy balances
- Data quality
- Data dissemination

Highlights: Balances Structure

- **Presentation of primary and secondary oil products in energy statistics versus energy balances**

Secondary production=0

Commodity Balance

	Crude oil (kt)	Motor Gasoline (kt)
Production	100	30
Import		
Export	10	24
Supply	90	6
Oil Refineries	88	
Final Consumption	2	6

Energy Balance

	Crude oil (TJ)	Motor Gasoline (TJ)
Production	4230	
Import		
Export	423	1063
Supply	3807	-1063
Oil Refineries	-3722	1329
Final Consumption	85	266

Motor gasoline in kt x 44.3 TJ/kt = Motor gasoline in TJ

Crude oil in kt x 42.3 TJ/kt = Crude oil in TJ

Examples

Austria: Adding an energy module to Labor Force Survey increased the response rate and reduced costs

Bulgaria: NSO's metadata policy

Norway: lessons from publishing preliminary monthly statistics and balances

South Africa: experience with social media and dissemination in a developing country

UK: Energy Efficiency Data framework measures the result of energy efficiency policies

Azerbaijan: producing full commodity balances for all products

FAO guidance on fuelwood surveys

Confidentiality practices for many countries

Legal frameworks for many countries

And many more!

IRES/ESCM Conclusion

- IRES provides methodology to compile energy statistics that are comparable across products and countries, and consistent with other statistics
- ESCM will provide guidance on HOW, with real examples
- This applies to JODI! JODI data agree with IRES definitions and concepts, and can be used to compile annual data for international organisations (UNSD, IEA, APEC…)
- ESCM will contain guidance and examples that will be relevant for JODI

General Conclusion

- Harmonisation does not happen overnight. It needs time, effort, resources and commitment.
- A lot has been achieved: agreement on product and flow definitions (InterEnerStat and IRES/ESCM)
- Several joint initiatives: JODI Oil and JODI Gas
- Joint training and capacity building
- Underlying principle: evolution not revolution. The main objective is to support energy policy and energy analysis.
- Further cooperation includes joint training material (open university) with on-the-shelf training material (experience of OLADE in on-line training very valuable)

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